APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/067,365	02/05/2002	Raoul Florent	FR01001	7414

24737	7590	01/11/2005	

PHILIPS INTELLECTUAL PROPERTY & STANDARDS
P.O. BOX 3001
BRIARCLIFF MANOR, NY 10510

EXAMINER
SETH, MANAV

ART UNIT	PAPER NUMBER
2625	

DATE MAILED: 01/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<table>
<tr><td rowspan="2" colspan="2">Office Action Summary</td><td>Application No.</td><td>Applicant(s)</td></tr>
<tr><td>10/067,365</td><td>FLORENT ET AL.</td></tr>
<tr><td></td><td></td><td>Examiner</td><td>Art Unit</td><td></td></tr>
<tr><td></td><td></td><td>Manav Seth</td><td>2625</td><td></td></tr>
</table>

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty.(30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>02/05/2002</u>.

2a)☐ This action is **FINAL**.　　2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-15</u> is/are pending in the application.

　　4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-5,10,11 and 13-15</u> is/are rejected.

7)☒ Claim(s) <u>6-9 and 12</u> is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

　　Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

　　Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

　　a)☒ All　b)☐ Some *　c)☐ None of:

　　　1.☒ Certified copies of the priority documents have been received.

　　　2.☐ Certified copies of the priority documents have been received in Application No. _____.

　　　3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

　　* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>02/05/2002</u>.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Specification

1.   The disclosure is objected to because of the following informalities:

- Specification inconsistent with the drawing: .

The specification on page 12, lines 21-24 are inconsistent with the drawing 1C. The specification recites "MOD1 and MOD2 of the first branch BR" and " Modules MOD3, MOD4 of the second branch BR". Figure 1C teaches "MOD1 and MOD3 on first branch BR" and "MOD2 and MOD4 on second branch BR". The examiner suggests making corrections in the specification or in the drawings to be consistent with each other.

Claim Rejections - 35 USC § 101

1.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2.   Claims 1 and 15 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Regarding claims 1 and 15, they are either descriptive / non-descriptive material in a series of steps to be performed on a computer that merely manipulates

abstract idea or solves a purely mathematical problem without any limitation to a practical application.

Claim 1 recite "a software data partitioning model". A software model has to be stored on computer readable medium and then run on a computing device.

Claim 15 recite "A computer program product comprising a set of instructions for running the software system as claimed in claim 1". Again, a computer model has to be stored on a computer readable medium and then run on a computing device.

Claims 1 and 15 do not conform to current US practice. Examiner suggests correction.

Claim Rejections - 35 USC § 112

3.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4.   Claims 2, 3 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 2 recite the limitation "the Communication Pattern is formed of nodes linked by arcs". The limitation appears to claim a flowchart of a software model. The terms such as nodes, arcs, ports are not known in the software construction art. The claim 2 does not conform to current US practice. Examiner suggests correction.

Claim 3 depends on claim 2 and faces the same rejection as claim 2. Additionally, Claim 3 recites the limitation "the Source Module has no input port and the Sink Modules have no Output Ports". The claim limitations appear to be indefinite to particularly point out the subject matter which applicant regards as the invention. More details are required in order to clearly explain the claimed limitations because of the following :

- No input port to the Source Module means no input data to Source Module. Therefore the Source module does not have any data to process.

- No output ports for the Sink module means no processed data is output.

- Claim 13 recites the limitation "gathering said two parts of images within the Sink Processing function and push the final result towards a targeted Terminal Port". In claim 13, Sink Module outputs the data to a targeted Terminal Port. Claim 13 is not consistent with claim 3.

Without these additional details, one of ordinary skill in the art would be burdened by undue experimentation and delay in making or using the claimed invention.

Examiner assumed the Source Module has Input port and Sink Module has Output port for examination purposes.

Examiner suggests the correction of all the claims that depend on claim 2 so that they conform to current US practice.

Claim Objections

5.   Claim 7 objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 7 is dependent on claim 7.

Examiner assumed claim 7 to be dependent on claim 6 for examination purposes.

Claim Rejections - 35 USC § 103

3.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4.   Claims 1, 2, 10, 11, 13, 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brett, U.S. Patent No. 6,373,529 in view of Halmann et al., U.S. Patent No. 6,526,163.

Claim 1 recites the limitations "a software data partitioning model, referred to as Communication Pattern, which partitions the images of the sequence using time-stamped data packets, the transfer of which may overlap the execution of said image processing functions". Brett discloses a multi-channel system for processing a stream of video data (sequence of images) by deploying image processing functions onto a multiprocessor system, where each channel has at least one processor, processing input image data in order to provide processed output image data (figure 2; column 2, lines 43-57; column 3, lines 5-8). Brett further discloses the implementation of each image parallel processing function in software (column 4, lines 19-22). Brett further discloses partitioning of the image frame into image strips (image data packets) and transferring these image strips to different processors of different channels for image processing (column 3, lines 60-63). It is clear from the above that the image strips when transferred through each pipeline channel also undergo the image processing operations. Brett does not teach of use of time-stamps in partition the images of the sequence.

However, Halmann teaches the concept of time stamping of the image. Halmann discloses an ultrasound system with parallel processing architecture (Figure 1 and 2; column 4, lines 27-30; column 7, lines 10-20). Halmann further discloses acquiring of image frame and storing it in so called CINE memory (column 8, lines 16-23) and then

applying time-stamping to the image frame using CINE thread (column 11, lines 5-7) and then dividing the image frames into segments and then distributing each image segment to a different processor pipeline where the image segment undergoes image processing functions and then gets transferred to the display device (column 8, lines 56-67; column 9, lines 1-13).

Therefore, it would had been obvious to one having ordinary skill in the art at the time of the invention was made to include the teachings by Halmann in the invention of Brett. One would have been motivated to include the concept of image-time stamping by Halmann in the invention of Brett because both references are directed to run at real time and Halmann provides the concept of time-stamping which is required in combining the real-time image segments after parallel processing so that each image segment is placed at its appropriate place in the reconstituted image and image time-stamping will decrease the image transfer latency and better image synchronization.

Claim 2 further recites the limitation "the Software System of Claim 1, wherein the Communication Pattern is formed of nodes linked by arcs; the nodes are Software Modules; the arcs are oriented Connections associated to the Modules through Ports; and each Module activates one Image Processing Function attached to it and manages data transfers and synchronization". As disclosed before in the rejection of claim 1, Brett discloses implementing the image parallel processing functions in software. It is apparent that each processor in the pipeline can be called as node and the software that sits on each processor in the pipeline can therefore be also called as node and this

node will connect to another node (processor) through the ports associated with the processor and thus the software ports can be called as arcs. It is well known in art of electronics that a processor comprises of multi-ports (multi-pins), some ports are used as data ports to transfer data to and from the processor and some ports are used as handshake signal ports when processor is attached to some other electronic components and these ports can be programmed to be one-directional or bi-directional on the user needs. Brett further discloses that each processing unit (module) will provide a image processing function only on a portion of a video data (column 2, lines 58-61; column 4, lines 9-13) and will further transfer the data by synchronizing with another processor for another image processing function or to the output unit for reconstructing the split portions of the image frame by possibly a image combiner (processor) as discussed before in rejection of claim 1 (Figure 2).

Claim 10 recites "a Pipe-Line Connection that is a point to point Connection, which transfers consecutive image strips". Claim 10 has been analyzed and rejected as per claims 1 and 2.

Claims 11 and 13 has been analyzed and rejected as per claim 10.

Claims 14 and 15 had been analyzed and rejected as per claim 1.

5.   Claims 3, 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brett, U.S. Patent No. 6,373,529, in view of Halmann et al., U.S. Patent No. 6,526,163 and further in view of Riddle, U.S. Patent No. 5,444,709.

As analyzed in rejection of claim 1, the combined invention of Brett and Halmann provides the pipelined multiprocessor system, which can be programmed in software, in which time stamped image strips (data packets) are transferred from **router** (Source Module) through each pipeline and each pipeline further comprise of at least one processor (Ordinary Module) which provides image processing functions on the image strips and processed image strips are further transferred from each pipeline to a possible image combiner processor (Sink Module). Both Brett and Halmann do not teach of generating a time reference data structure, which locates every image data packets of a given Image Sequence.

However, Riddle discloses the concept of use of header in each data packet, which includes the time reference data structure (Time-Ref) information such as packet sequence number, flags, frame number, stream ID and timestamp (column 3, lines 10-27 and lines 64-68; column 4, lines 1-20). Therefore, it would had been obvious to one having ordinary skill in the art at the time of the invention was made to use the teachings by Riddle in the combined invention of Brett and Halmann. One would have been motivated to include the teachings of Riddle in the combined invention of Brett and Halmann because all the references are directed towards providing a real time image transfer and processing and Riddle further supports the combined invention of Brett and Halmann by providing a header section to each of the data packets which will provide

time reference and identification to each data packet which will locate every image data

packets of a given image sequence.

Claim 4 has been analyzed and rejected as per claim 3.

Claim 5 has been analyzed and rejected as per claim 3.

Allowable Subject Matter

3.   Claims 6-9, and 12 are objected to as being dependent upon a rejected base

claim 1, but would be allowable if rewritten in independent form including all of the

limitations of the base claim and any intervening claims.

The following is an examiner's statement of reasons of allowance:

The instant invention is directed to a multiprocessor pipelined system controlled

by software which provides the method of transferring the real-time image by dividing

the image into time stamped image strips and transferring each image strip to each

parallel pipeline where each pipeline provides some sort of image processing and then

collecting all the image strips form each pipeline to combine them to form the compete

real time image by reducing the latency period. The limitation "Image strips may overlap

other image strips" recited in claim 6 is not disclosed or suggested by the prior art of

record. Claim 7, 8 and 9 are dependent on claim 6, therefore they will meet the conditions of allowance as applied to claim 3.

The limitation "according to image strip-indices with possible spatial shifts between Image Strips and time delay adjustments" recited in claim 12 is not disclosed or suggested by the prior art of record.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

6.   The prior art of record and not relied upon is considered pertinent to applicant's disclosure:

- Gove et al., U.S. Patent No. 5,371,896, discloses a multiprocessor having a control over synchronization of processors in mind mode and methods of operation.

- Pearson et al., U.S. Patent No. 5,434,629, discloses a real time line scan processor which comprises of a plurality of parallel channels having an upstream end and a downstream end.

- Hochmuth et al., U.S. Patent No. 5,325,485, discloses the method and apparatus for displaying primitives processed by a parallel processor system in a sequential order.

- Soderberg et al., U.S. Patent No. 5,493,643, discloses a image generator architecture employing tri-level fixed interleave processing and distribution buses.

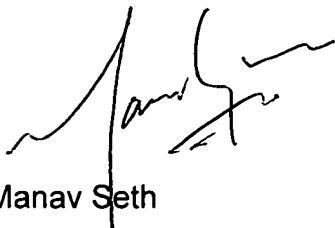- Rawlings, U.S. Patent No. 5,041,993, discloses a method of processing sub-images of an image field.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Manav Seth whose telephone number is (703) 306-4117. The examiner can normally be reached on Monday to Friday from 8:30 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, examiner's supervisor, Bhavesh Mehta, can be reached on (703) 308-5246. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you
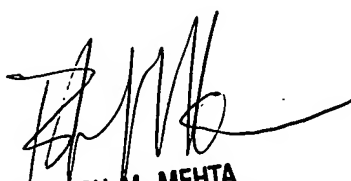
have questions on access to the Private PAIR system, contact the Electronic Business

Center (EBC) at 866-217-9197 (toll-free).

Manav Seth

Art Unit 2625

BHAVESH M. MEHTA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600

KANJIBHAI PATEL
PRIMARY EXAMINER